Du'Bois J. Ferguson Remediation Manager

Schlumberger Oilfield Service 300 Schlumberger Drive Sugar Land, TX 77478 Tel: 281-285-3692 DFerguson3@slb.com

April 8, 2011

VIA FedEx Overnight

Section Chief Environmental Enforcement Section U.S. Department of Justice PO Box 7611 Washington, DC 20044-7611 Craig Zeller
Remedial Project Manager
Superfund Division
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

Re: DOJ Case No. 90-11-2-696/1

Subject: March 2011 Monthly Report

Sangamo Weston/Twelvemile Creek/Lake Hartwell Superfund Site

Natural Resources Trustees Consent Decree

Dear Section Chief:

In accordance with the Consent Decree and Section XIV of the Unilateral Administrative Order for the above referenced site, Schlumberger is required to submit Progress Reports on a quarterly basis. Given the current pace of activities, we will be submitting Progress Reports on a monthly basis until further notice in satisfaction of the reporting requirements of the Consent Decree and Unilateral Administrative Order.

In keeping with Paragraph 20 of the Consent Decree:

I certify that the information contained in or accompanying this submission is true, accurate and complete. This certification is based on my personal preparation, review, or analysis of the submission, and/or supervision of persons who, acting on my instructions, made the verification that the submitted information is true, accurate and complete.

If you have any questions, please do not hesitate to contact me at (281) 285-3692.

Sincerely,

DuBois J. Ferguson

Remediation Manager



U.S. EPA REGION IV

SDMS

POOR LEGIBILITY

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cc: Honorable G. Ross Anderson, Jr.
G. Ross Anderson, Jr. Federal Building and United States Courthouse
315 South McDuffie Street, 2nd Floor Anderson, SC 29624

Honorable William W. Wilkins Nexsen Pruet 55 E. Camperdown Way Suite 400 Greenville SC 29601

Leon C. Harmon Esq. Nexsen Pruet 55 E. Camperdown Way Suite 400 Greenville SC 29601

John Cresswell
Assistant Director
Division of Site Assessment and Remediation
Bureau of Land &Waste Management
SC Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201

Regional Solicitor's Office U.S. Department of the Interior Attn: Harriet M. Deal 75 Spring Street, SW Room 304 Atlanta, GA 30303

Diane Beeman & Diane Duncan Ecological Services Office U.S. Fish and Wildlife Service 176 Croghan Spur Road, Suite 200 Charleston, SC 29407

Paul League SC Department of Natural Resources Office of Chief Counsel 1000 Assembly Street Columbia, SC 29202

Anthony Rabern Georgia Department of Natural Resources 3695 Highway 197 Clarkesville, GA 30523 Office of the Attorney General Timothy J. Ritzka Assistant Attorney General 40 Capitol Square SW Atlanta, GA 30334

Jamie Sykes Richard B. Russell Project Office 4144 Russell Dam Drive Elberton, GA 30635

Frank S. Holleman III Wyche Burgess Freeman & Parham, P.A. 44 East Camperdown Way Greenville SC 29601-3591

Mr. Paul Doody ARCADIS 6723 Towpath Road Syracuse, NY 13214-0066

Mr. Ronald Cardwell McNair Law Firm, P.A. Post Office Box 447 Greenville, SC 29602

Ms. Celeste T. Jones McNair Law Firm, P.A. Post Office Box 11390 Columbia, SC 29211

March 2011 Monthly Report Sangamo Weston/Twelvemile Creek/Lake Hartwell Superfund Site Operable Unit 2

Activities Initiated/Completed

- Dredge Clare initiated dredging in the Woodside II (WSII) Impoundment, and performed dredging on the south side up to approximately STA 59+50 on pass 1 of 3.
- Dredge Kami continued to dredge on the north side in WSII, and performed dredging on the north side up to approximately STA 57+60 on pass 1 of 3.
- · Completed demolition of the WSI dam.
- Initiated and continued deconstruction of the access road built to facilitate access to the WSI dam during demolition, and performed associated grading near WSI.
- Initiated and continued construction of crane pad at WSII dam.
- Initiated and completed demolition of brick building on the downstream side of WSII dam.
- Initiated and continued to disassemble the penstock at WSII dam.
- On March 3, 2011, the Honorable G. Ross Anderson visited the Site.
- On March 7, 2011, SCDHEC Solid Waste Management Regional personnel were onsite for a general visit/inspection and performed a Class Three Landfill Inspection in accordance with Regulation 61-107.19, Part V. The inspection indicated that the facility was operating properly, and no problems were observed. The completed Inspection Form is provided as Attachment 1.
- On March 29, 2011, Leon Harmon visited the site.

Results of Sampling, Tests, and Other Data

- Sampling and analysis is being conducted relative to the creek turbidity, and water treatment system (WTS) effluent water. Results for the effluent water are attached (Attachment 2) and the continuous turbidity monitoring data is available upon written request.
- Project photographs are included as Attachment 3.

Plans, Reports, and other Deliverables

- Analytical data related to samples collected from the WTS to assess water treatment effluent water were submitted to SCDHEC in the February Monthly Report (submitted March 28, 2011) in Attachment 2.
- Submitted draft dredge verification survey of STA 51+00 on March 18 to John Adams of Taylor Engineering for preliminary review.

Work Planned for April 2011

- Continue dredge verification surveys with submittal of each 500 foot section to the Special Receivers and their consultant.
- Continue placement of dredged sediment in SMU.
- Continue monitoring WTS discharge.
- Continue dredging in the WSII impoundment.
- Complete activities associated with demolition of the WSI dam (i.e., deconstruction of the access road, grading of the adjacent area, etc.).
- Continue construction of crane pad in WSII.
- Continue disassembly of the penstock at WSII.
- Meet with Trustee Council on April 26, 2011 in Greenville, SC.

Issues Encountered, Anticipated Delays, Solutions

- Extreme weather conditions (e.g., heavy rain, thunder/lightening) during the
 weeks ending March 6th and March 27th impacted site operations, including
 temporary suspension of dredging operation due to increased water elevations
 and safety concerns. Erosion and sediment controls were maintained and/or
 replaced as necessary.
- Changes to the upstream water level rendered the continuous monitoring system ineffective. To facilitate continued monitoring of turbidity during the dredging activities, industry recognized manual monitoring procedures are, and will continue to be used daily upstream and downstream of the dredging activities. Both the sampling and data review shall continue to be performed in accordance with the Final Design.
- As anticipated, sediment has been carried to the Ball's Beach area from areas upstream. An alternate launch location was used to maintain necessary access to the dredges.

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Attachment 1



Class Three Landfill Inspection Form Regulation 61-107.19, Part V

PROMOTE PROTECT PROSPER	# 1 P	
Facility Name: 12 M.	le Creek SMU	Date/Time of Inspection 7 MAR 1/
County: PILLENS		Permit #:
Reason for Inspection:	X Routine; Follow-up; C	
Current Weather Conditi		
1	Previous 24 hours: Rain N - If ye	es, amount 2_" inches, High winds Y N
1 - Meets or exceeds re	gulatory requirements; 2A - Improvement i	needed (minor issues exist; corrective measures recommended);
recurring issues with mir ment referral required);	imal or no corrective action taken - allege	on required and scheduled); 3 – Unacceptable (serious issues and/or ed regulatory or permit condition violations have occurred – enforce- uirements; N – No: Corrective measures recommended that should e; NA – Not applicable; NI – Not inspected
	ing Receipt of Unapproved Waste	Scale Requirements (258.30)
(258.20) 1. <u>WA</u> Overall effec	tiveness of Special Waste Analysis and	26. Y NAMI Scales installed and functioning properly Required Equipment to Operate Landfill (258.31)
	ion Plan (SWAIP) ed waste screener present	27. (YN NA NI Required equipment operational – if not please provide details in comments as to the
3. YNNANI Rand	om daily load inspections conducted and	type of equipment down for repairs, impact to
	mented rds of unacceptable waste maintained	operations, and status on temporary replace- ment equipment
5. ŶN NA NÎ Perso	onnel training program on recognition of	Certified Landfill Manager/Supervisor (258.32)
	ated hazardous waste and PCB waste rd of Notification to Department within	29. Y N NANI Certified manager or supervisor on-site
	ours of hazardous or PCB waste receipt	Leachate Collection System (258,33 and 34) 30. Y NOANI Leachate handling agreement in place
	thorized wastes removed from working by the end of the operating day	31. Leachate collection system management
Cover Material Require 8 ≥ 6" soil (sho		Leachate Recirculation System (258 Subpart I and Permit) 32. Leachate recirculation system management
9. Alternate Da	ily Cover (ADC)	33. YNNA NI Required leachate recirculation reports/data
	g-term and/or intermediate cover) uate soil quantity available for cover	contained in the landfill's operating record 34. Leachate seep management
Control of (258.21, 22,	24, 25 and 37):	35. Pyceachate collection system management
12. Blowing litter 13. Off-site odor		Testing of Municipal Solid Waste (MSW) Incinerator Ash (258,35)
14. Disease vec	tors	36. YNNANI MSW incinerator ash management
15. Fires/Open to 16. Scavenging	ourning and a second of the se	Sign Requirements (258.36) 37. Y N NA NI Required signs posted
Access Requirements 17. Condition of	(258:25) access controls	Condition of Monitoring Wells (258.51) 38. Monitoring well maintenance program
18. Condition of	all weather roads - entrance	Working Face/Elevation (258.87)
19. Condition of Run-ori/Run-off Contro	all weather – internal haul roads	39. (YNNANI Method of elevation control with benchmark
20 Condition of	ditches/swales	Plans and Permit (Permit)
22. Condition of	berms/terraces/downchutes sedimentation ponds	40. Y NNANI Operating in accordance with approved plans and general permit.
Leachare Seeps (258.2)	6 and 27)	41. Y N NANI Permitted engineering drawings available 42. Y N NANI Permitted operational plan available
Liquid Restrictions (25	8.28)	43. Y N NA NI Permitted stabilization/landscaping plan
24. Free of unau	thorized bulk or non-containerized	44. YN NAINI Permitted contingency plan available
Record Keeping Requi		45. Y N NA NI Permitted approved groundwater-monitoring
	ired records are maintained in the	plan available 46. YN NANI Permitted closure plan available
		47. YNNANI Permitted post-closure plan available
Name of those present	during the inspection:	
Comments: WORK WA	MAKING PLACE IN REMOVENG 1	THE WOODSTOPE MILL DAM UPON INSPECTION.
Inspection Item	Corrective actio	on required Date to be completed
75 (25 27 27 28 27		
Additional comment page	•	iotos taken: Y(N)
condition existing at the	time of inspection.	sonally checked each item and has answered according to the true
11111	11	
MI III	ARCADIS.	Pull Was a

Facility Representative

SCUREC Inspector

DHEC 3691 (08/2008)

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Original (White) = SCUREC/BLWM Copy (Yellow) = Facility Copy (Pink) = Regional EQC Office

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Attachment 2



Mr. Dale Stoudemire, Manager South Carolina Department of Health and Environmental Control Bureau of Water/Water Pollution Control Division Data Management Section 2600 Bull Street Columbia, South Carolina 29201 ARCADIS 6723 Towpath Road P.O. Box 66 Syracuse New York 13214-0066 Tel 315.446.9120 Fax 315.449.0017 www.arcadis-us.com

ENVIRONMENTAL

Subject:

Schlumberger Technology Corporation, Twelvemile Creek Restoration Project Pickens County, South Carolina February 2011 Sampling Results Report

Dear Mr. Stoudemire:

On behalf of Schlumberger Technology Corporation (STC), ARCADIS is providing a summary of sampling results for the Twelvemile Creek Restoration Project in Pickens County for the month of February 2011 in accordance with the October 15, 2009 letter from Butch Swygert of South Carolina Department of Health and Environmental Control (SCDHEC) to Chris Moody of ARCADIS and the August 9, 2010 SCDHEC construction operation approval memorandum, which replaces the March 11, 2010 SCDHEC construction operation approval memorandum. The August 9, 2010 approval memorandum upgrades the onsite water treatment plant to a Group III – Physical/Chemical facility with a maximum discharge of 8.64 million gallons per day (MGD).

Table 1 contains the daily discharge information from the water treatment plant to Twelvemile Creek. This data is recorded onsite and is reviewed by a South Carolina certified water treatment plant operator. The maximum daily discharge for February 2011 was 4.18 MGD on February 5. The average discharge from the water treatment plant for the month of February was 2.13 MGD.

Table 2 contains the results of the analyses described in Table 1 of the October 15, 2009 letter that were performed on the water treatment plant effluent during the month of February 2011. The Laboratory Services Reports from Rogers & Callcott Laboratory Services related to these tests are provided in Attachment A. The samples were analyzed for pH, temperature, total suspended solids and PCBs. The results of these tests were within the ranges outlined in the October 15, 2009 letter.

Date:

March 28, 2011

Contact:

Lance S. Ketcham

Phone:

315.671.9163

Email:

lance.ketcham@ arcadis-us.com

Our ref: MT001019

ARCADIS

Mr. Dale Stoudemire

March 28, 2011

Table 3 summarizes the results of the whole effluent toxicity (WET) testing; the Laboratory Services Reports for these tests are provided in Attachment B. Two sampling events were conducted in the month of February because the first test was terminated due to control mortality. The WET testing results from the second event were within the ranges outlined in the October 15, 2009 letter.

If you have any questions on the above, please feel free to contact me.

Sincerely,

ARCADIS

Lance S. Ketcham Principal Engineer

Copies:

Melinda Vickers, SCDHEC Eric Kim, SCDHEC Du'Bois J. Ferguson, STC Gary Odom, STC J. Paul Doody, ARCADIS

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Tables

Table 1. Daily Discharge from Water Treatment Plant for February 2011. Twelvemile Creek Restoration Project, Pickens County

Date	Discharge, MGD
Monthly Avg ¹	MR
Daily Max ¹	MR
2/1/2011	3.13
2/2/2011	2.57
2/3/2011	1.63
2/4/2011	3.28
2/5/2011	4.18
2/6/2011	1.33
2/7/2011	0.59
2/8/2011	1.86
2/9/2011	2.17
2/10/2011	2.07
2/11/2011	2.74
2/12/2011	3.08
2/13/2011	1.26
2/14/2011	3.77
2/15/2011	3.00
2/16/2011	1.02
2/17/2011	1.56
2/18/2011	0.91
2/19/2011	3.85
2/20/2011	1.58
2/21/2011	1.51
2/22/2011	2.36
2/23/2011	2.22
2/24/2011	2.77
2/25/2011	2.18
2/26/2011	1.66
2/27/2011	0.85
2/28/2011	0.36
Total	59.50
Days per Month	28
Average	2.13
,,,,,,,,,,	

Notes:

2. The bolded value is the maximum daily discharge recorded.

Superscript Notes:

¹Discharge reporting guidelines are outlined in the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control) to Chris Moody (ARCADIS).

Acronyms and Abbreviations:

Avg - average

Max - maximum

MGD - million gallons per day

MR - monitor and report

Page 1 of 1

^{1.} Data is from onsite records detailing the daily discharge volumes to Twelvernile Creek; a discharge of 0 MGD is recorded when the treatment plant is not operating or discharging to Twelvernile Creek. Discharge data was recorded by the South Carolina certified wastewater treatment plant operator from Rogers & Calloott.

Table 2. Effluent Sampling Result for February 2011. Twelvemile Creek Restoration Project, Pickens County

Sample	Location	Sample	Week	Sample Date and		pH Temp. T8S		PCB (μg/L)						
Number	Location	Туре	TTOOK	Time	-рп	(°C)	(mg/L)	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
Monthly Avg. 1					6.0 to 8.5	-	25	0.5	0:5	0.5	0.5	0.5	0.5	0.5
Daily Max.				-	6.0 to 8.5	-	45	0:5	0:5	0.5	0.5	0.5	0.5	0.5
AC94867	WTP Effluent Discharge .	Ğ	1	2/1/2011 09:00	6.2	8.0	NA	NA	NA	NA	NA	NA	NA	NA
AC94868	WTP Effluent Discharge	С		2/1/2011 08:55	NA	NA.	8.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AC95366	WTP Effluent:Discharge	G	2	2/8/2011 09:35	6.0	6.6	NA	NA	NA	NA	NA	NA	NA	NA
AC95367	WTP Effluent Discharge	С		2/8/2011 09:30	ÑA	NA	6.8	<0.5	<0.5	<0.5	<0:5	<0.5	<0.5	<0.5
AC95825	WTP Effluent Discharge	G	3	2/15/2011 08:59	6.3	8.5	NA	NA	-NA	NA	NA	NA	NA	NA
AC95826	WTP Effluent Discharge	С		2/15/2011 08:45	NA	NA	2.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AC96098	WTP Effluent:Discharge	G	4	2/22/2011 08:55	6.0	15.3	NA	NA .	NA	'NA	NA	NA.	NA	NA
AC96099	WTP Effluent Discharge	С		2/22/2011 08:50	NA	NA	< 2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			•	Average	6.1	9.6	5.1		-	-	-	-	-	-

Notes:

Superscript Note:

Acronyms and Abbreviations:

°C - degrees centigrade

G - grab sample

C - 24-hour composite sample

μg/L - micrograms per liter

MGD - million gallons per day

mg/L - milligrams per liter

NA - not analyzed

PCB - polychlorinated biphenyl

Temp. - temperature

^{1.} Sampling results complied from Laboratory Services Reports provided by Rogers & Callcot Laboratory Services and submitted in tabular form as required per the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control:[SCDHEC]) to Chris Moody (ARCADIS) and the 3/11/2010 SCDHEC construction and operational approval memorandum.

^{2.} The monthly average includes non-detect readings as indicated by "<" (if applicable) and assumes a value equal to the detection limit. Monthly averages are not calculated for parameters without a detected concentration (indicated by

¹ Discharge reporting guidelines and limits are outlined in the 10/15/2009 letter from Butch Swygert (SDHEC) to Chris Moody (ARCADIS)

Table 3. Whole Effluent Toxicity Result for February 2011. Twelvemile Creek Restoration Project, Pickens County

WET Analysis	Monthly Avg. ¹	Daily Max. ¹	Event 1 Results	Event 2 Results
Ceriodaphnia dubia Chronic WET @ CTC=17.4%	25%	40%		1.3%
Ceriodaphnia dubia Chronic WET-Reproduction @ CTC=17.4%	MR, %	MR, %	-	1.3%
Ceriodaphnia dubia Chronic WET-Survival @ CTC=17.4%	MR, %	MR, %	_	0.0%
Ceriodaphnia dubia Acute WET @ ATC=35.5%		0 ²		0

Notes:

- 1. WET testing was performed by ETT.
- 2. Results of the WET testing are:presented as the:percent reduction:relative to the control sample.
- 3. Samples for Event 1 were collected on 2/1, 2/3, and 2/4/2011. One composite sample was collected each day (sample numbers AC94831, AC94915, and AC95182, respectively) to complete the Chronic WET testing. Sample AC94831was used in the Acute WET testing. Event 1 testing was terminated due to control mortality.
- 4. Samples for Event 2 were collected on 2/15, 2/16, and 2/18/2011. One composite sample was collected each day (sample numbers AC95776, AC95790, and AC96052, respectively) to complete the Chronic WET testing. Sample AC95776 was used in the Acute WET testing.
- 5. Shaded values indicate that the results are not within the ranges outlined in the 10/15/2009 letter.

Superscript Notes:

- ¹ Discharge reporting guidelines and limits are outlined in the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control) to Chris Moody (ARCADIS).
- ² A results of "0" indicates a passing result.

Acronyms and Abbreviations:

MR - monitor and report

NA - not analyzed

WET - whole effluent toxicity

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Attachments

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Attachment A

Laboratory Services Report: October 15, 2009 Table 1 Analyses P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation

Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Received:

02/01/2011

Time Received:

12:10

Date Reported:

02/04/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC94867

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 02/01/2011 at 09:00

AC94868

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/01/2011 at 08:55

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

authorized signature

Results reviewed by:

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

Sample Number	Sample Description, I	Date and Time Co.	<u>llected</u>				
AC94867	Schlumberger Techno at 09:00	logy TMC Water T	reatment Pl	ant Effluer	nt Discharge grab, c	ollected on	02/01/2011
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
pH (Fleld)	6.2	pH units		0.1	02/01/2011 09:00	LRW	SM 4500HB
Temperature (Field)	8.0	degrees C		0.1	02/01/2011 09:00	LRW	SM 2550B

Sample Number Se	ample Description, D	ate and Time (<u>Collected</u>						
	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 02/01/2011 at 08:55								
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method		
3 to 5 day turn around	Completed	-			02/04/2011 00:00				
Total Suspended Solids	8.8	mg/l		2.0	02/01/2011 12:25	JLA	SM 2540D		
Polychlorinated Biphenyls (PCBs) PCB-1016	< RDL	ug/l		0.5	02/03/2011 00:40	RKH	EPA 608		
PCB-1221	< RDL	ug/l		0.5	02/03/2011 00:40	RKH	EPA 608		
PCB-1232	< RDL	ug/l		0.5	02/03/2011 00:40	RKH	EPA 608		
PCB-1242	< RDL	ug/l		0.5	02/03/2011 00:40	RKH	EPA 608		
PCB-1248	< RDL	ug/l		0.5	02/03/2011 00:40	RKH	EPA 608		
PCB-1254	< RDL	ug/l		0.5	02/03/2011 00:40	RKH	EPA 608		
PCB-1260	< RDL	ug/l		0.5	02/03/2011 00:40	RKH	EPA 608		
2,4,5,6-Tetrachioro-m-xylene, (Surro	gate 98	%		0	02/03/2011 00:40	RKH	EPA 608		
Decachiorobiphenyl, (Surrorate)	94	%		0	02/03/2011 00:40	RKH	EPA 608		
Liquid-liquid Extraction Pest/PCB 60	8 Completed				02/01/2011 13:30	DBB	EPA 608		

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ROGERS & CALLCOTT JABORATORY SERVICES

CHAIN OF CUSTODY RECORD

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P.O. Box 5 Phone (86	6855, Greenville, SC 29808 4) 232-1558 Fax (864) 232-6140 Address: 426 Fairforest Way Greenville, SC 29807					ych NN	N/N /G/ 2k1/	Con Con Samp	Filtered (Yes/No) Cooled (Yes/No) ontainer Type (P/G) Italner Volume ole Type (Grab/Composite) e Source (WW, GW, DW, Other)
Report To: Telephone No	FAX No.	Containers		2250	N/K/se/7	N		Sample Lab Receipt Lab Receipt	Source Chlorinated (Yes/No) opt Cl, Check mrs / t pH Check /2-/-// Preserved (Code)
Rogers & Yr Time Date	Sample Description	Total Number of	PARAMETERS	7.55 #				A-None B-HNO ₃ C-H _s SO ₄	D-NaOH G-Boric Acid E-HCL H-Ascorbic Acid
948/18 2/1 0855	WATRATRATMENT PLANT ETTUENT DISCHARCE	2		1]-	7		Shuplex ON 1/31/ BU K	15000.0855 11. Time prop. 2+C
								0H6,2 7Emp802	CRAB TAXENT PEADE 0900 By Rtc
Relinquished by (Sig.) Relinquished by (Sig.) Relinquished by (Sig.)	Date/Time Date/Time Received by (Sign 2) Shipper Name & Received by (Sign 4) Shipper Name & Shipper Na	1.)	<u>~</u>		<u>ء</u> ا۔	11	/Time (2)0 /Time	KNOWN HAZARDS	ASSOCIATED WITH SAMPLES
Relinquished by (Sig.) Seal # at'chd by Form Revised July 2008	Date/Time Received by (Sig B) Shipper Name & Recyd. Intact by Seal #).) #	hd b	уО			Time	At time of coll	i i



ROGERS & CALLCOTT LABORATORY SERVICES

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Received:

02/08/2011

Time Received:

12:10

Date Reported:

02/10/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC95366

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 02/08/2011 at 09:35

AC95367

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/08/2011 at 09:30

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

Umy Honley

Results reviewed by:

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

Sample Number	Sample Description,	<u>Date and Time Co</u>	llected 1				
AC95366	Schlumberger Techno at 09:35	ology TMC Water T	reatment Pl	ant Effluer	it Discharge grab, c	ollected on	02/08/2011
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
pH (Field)	6.0	pH units		0.1	02/08/2011 09:35	LRW	SM 4500HB
Temperature (Field)	6.6	degrees C		0.1	02/08/2011 09:35	LRW	SM 2550B

Sample Number	Sample Description, Date and Time Collected Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 02/08/2011 at 09:30									
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method			
3 to 5 day turn around	Completed				02/10/2011 00:00					
Total Suspended Solids	6.8	mg/l		2.0	02/08/2011 14:20	JLA	SM 2540D			
Polychiorinated Biphenyls (PCBs	;) < RDL	um#			00/40/00/4	DIG.	ED4 000			
PCB-1016	< RDL	ug/l		0.5	02/10/2011 01:14	RKH	EPA 608			
PCB-1221	< RDL	ug/i		0.5	02/10/2011 01:14	RKH	EPA 608			
PCB-1232	< RDL	ug/i		0.5	02/10/2011 01:14	RKH	EPA 608			
PCB-1242	< RDL	ug/l		0.5	02/10/2011 01:14	RKH	EPA 608			
PCB-1248	< RDL	ug/l	P	0.5	02/10/2011 01:14	RKH	EPA 608			
PCB-1254	< RDL	ug/l		0.5	02/10/2011 01:14	RKH	EPA 608			
PCB-1260	< RDL	ug/l		0.5	02/10/2011 01:14	RKH	EPA 608			
2,4,5,6-Tetrachioro-m-xylene, (Sui	тоgate 102	%		0	02/10/2011 01:14	RKH	EPA 608			
Decachiorobiphenyl, (Surrorate)	91	%		0	02/10/2011 01:14	RKH	EPA 608			
Liquid-liquid Extraction Pest/PCB	608 Completed				02/08/2011 13:00	DBB	EPA 608			

ROGERS & CALLCOTT

CHAIN OF CUSTODY RECORD

PAGE ____OF ___

LA P	SORATORY SERVICES		1.11.11	
	555, Greenville, SC 29606) 232-1556 Fax (864) 232-6140		/N/N/	Filtered (Yes/No)
	ddress: 426 Fairforest Way	} }	/	/ / Cooled (Yes/No)
	Greenville, SC 29607	1 1	[P/G/	/ / / Container Type (P/G)
Client Name Schlub	m BACGER		12C/41/	/ / Container Volume
Address			c c	Sample Type (Grab/Composite)
			www.	/ / Sample Source (WW, GW, DW, Other)
Report To:			N/N / /	Sample Source Chlorinated (Yes/No)
Telephone No	FAX No		MARROW	Lab Receipt Cl. Check mes/
PO No	The	Containers	NI Restor	Lab Receipt pH Check /2-9-(1
TO NO.		(4 A	Preserved (Code)
Rogers & Yr	Sample Description	ber of	00	A-None D-NoOH G-Baric Acid B-HNO ₃ E-HCL H-Ascorbic Acid C-H ₄ SO ₄ F-No ₅ S ₂ O ₅ I-
Lab No. Date		Total Number	9cB	COMMENTS:
		Total PARA	3	
953112/8 0930	NATON THEATMENT PLANT	3 2	2/2	SAMUNSÃO JO 0930
13 24 3 0733	ETT. DISCH.			
	ET). VISCA.			ON-2/7/11 Time prop.
				AC953166
				QH 6,0 CRAB TAKEN
				THMP6.60 + READ@6935
				ON 2/8/11 By R+C
SAMPLER	Date/Time Received by (Sig.	.)	Date/Time	KNOWN HAZARDS ASSOCIATED WITH SAMPLES
Religious bed fig (Sign)	2/8/15 /210 Shipper Name &	floglo	2/8/11/210	AS UFFICIENT SAME HON
Relinquished by (Sig.)	Date/Time Received by (Sig.		Date/Time	Fierd Duplicates
③	Shipper Name &	#	i	02-03-11 P12:10 11
Relinquished by (Sig.)	Date/Time Received by (Sig.)	Date/Time	Temperature of blank or representative sample
⑤	(5) Shipper Name &	#		At time of collection 26 °C
Seal # at'chd by	Recyd. Intact by Seal #	at'chd by	Recvd. Intact by	At time of lab receiptC
Form Revised July 2008				R/C COC FORM



ROGERS & CALLCOTT LABORATORY SERVICES

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Received:

02/15/2011

Time Received:

11:55

Date Reported:

02/17/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC95825

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 02/15/2011 at 08:59

AC95826

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/15/2011 at 08:45

The attached report is for the samples that were received and are referenced above. Rogers and Calicott maintains a formal -QA/QC-program.-Unless-otherwise-noted, all analyses-performed-under NELAP certification-have-complied with-all-the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

Results reviewed by:

This report may not be reproduced, except in full, without written permission from Rogers & Callcott, Inc.

Sample Number	Sample Description, I	Date and Time Co	llected				
AC95825	Schlumberger Techno at 08:59	logy TMC Water T	reatment Pla	ant Effluer	nt Discharge grab, c	ollected on	02/15/2011
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
pH (Field)	6.3	pH units		0,1	02/15/2011 08:59	JTH	SM 4500HB
Temperature (Field)	8.5	degrees C		0.1	02/15/2011 08:59	JTH	SM 2550B

imple Number	Sample Description, D	ate and Time (Collected				
C95826	Schlumberger Technolo 02/15/2011 at 08:45	ogy TMC Water	Treatment Pla	ant Effluen	t Discharge compos	site, collect	ed on
rameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
to 5 day turn around	Completed				02/17/2011 00:00		· · · · · · · · · · · · · · · · · · ·
otal Suspended Solids	2.8	mg/l		2.0	02/15/2011 14:07	JLA	SM 2540D
olychlorinated Biphenyls (PCBs	;)						
CB-1016	< RDL	ug/i		0.5	02/17/2011 06:45	RKH	EPA 608
CB-1221	< RDL	ug/l		0.5	02/17/2011 06:45	RKH	EPA 608
CB-1232	< RDL	ug/l		0.5	02/17/2011 06:45	RKH	EPA 608
CB-1242	< RDL	ug/l		0.5	02/17/2011 06:45	RKH	EPA 608
CB-1248	< RDL	ug/l		0.5	02/17/2011 06:45	RKH	EPA 608
CB-1254	< RDL	ug/l		0.5	02/17/2011 06:45	RKH	EPA 608
CB-1260	< RDL	ug/l		0.5	02/17/2011 06:45	RKH	EPA 608
,4,5,6-Tetrachioro-m-xylene, (Su	rrogate 101			0	02/17/2011 06:45	RKH	EPA 608
ecachlorobiphenyl, (Surrorate)	102	%		0	02/17/2011 06:45	RKH	EPA 608
Iquid-liquid Extraction Pest/PCB	608 Completed				02/15/2011 13:30	CGW	EPA 608



AC

ROGERS & CALLCOTT

CHAIN OF	CUSTODY	RECORD
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PAGE	ľ	05	1
PAGE		OF.	4

P.O. Box 5655, Greenville, SC 29606 Phone (864) 232-1556 Fax (864) 232-6140 Shipping Address: 426 Fairforest Way Greenville, SC 29607 Client Name Schlum Benger Address					P P KCP C	J/N / C/ C/		Filtered (Yes/No) Cooled (Yes/No) Container Type (P/G) Container Volume Sample Type (Grab/Composite)
Report To: Telephone No FAX No PO No Project No	Containers		NA NA NA	7	N	/		Sample Source (WW, GW, DW, Other) Sample Source Chlorinated (Yes/No) Lab Receipt Cl, Check mcs/ Lab Receipt pH Check Z-17-1/ Preserved (Code)
Rogers & Yr. Time Sample Description Lab No.	Total Number of	PARAMETERS	755					A-None D-NoOH G-Boric Acid B-HNO, E-HCL H-Ascorbic Acid C-H ₂ SO, F-No ₂ S ₂ O ₃ I COMMENTS:
95826 2-15 845 WARNTREATMENT PLANT EST. DISCH.	2			1	-\lambda			SAMPLEN SETONES & SAMPLEN SETO
SAMPLER Relinquished by (Sig.) Relinquished by (Sig.) Date/Time Received by (Sig.) Shipper Name & Received by (Sig.) Shipper Name & Received by (Sig.) Relinquished by (Sig.) Date/Time Received by (Sig.) Shipper Name & Received by (Sig.) Shipper Name &	salle **		3	1-15-1 C	Oate/T	15-5 ime	Ter	OWN HAZARDS ASSOCIATED WITH SAMPLES mperature of blank or representative sample At time of collection 2 C
Seal # at'chd by Recvd. Intact by Seal # Form Revised July 2008		hd b	oyO	Recv	d. Into	ict by	<u> </u>	At time of lab receipt 0.4 Net Trozen C

ROGERS & CALLCOTT LABORATORY SERVICES

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Received:

02/22/2011

Time Received:

11:40

Date Reported:

02/24/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC96098

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab,

collected on 02/22/2011 at 08:55

AC96099

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/22/2011 at 08:50

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

amy & ashley

authorized Signature

Results reviewed by:

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

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Sample Number	Sample Description, I	Date and Time Co	llected				
AC96098	Schlumberger Techno at 08:55	logy TMC Water T	reatment Pl	ant Effluen	it Discharge grab, c	ollected on	02/22/2011
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
pH (Field)	6.0	pH units		0.1	02/22/2011 08:55	LRW	SM 4500HB
Temperature (Field)	15.3	degrees C		0.1	02/22/2011 08:55	LRW	SM 2550B

Sample Number S	Sample Description, De	ate and Time (<u>Collected</u>				
	Schlumberger Technolo 02/22/2011 at 08:50	gy TMC Water	Treatment Pla	ant Effluen	t Discharge compos	site, collect	ed on
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
3 to 5 day turn around	Completed				02/24/2011 00:00		
Total Suspended Solids	< RDL	mg/l		2.0	02/22/2011 11:49	JLA	SM 2540D
Polychlorinated Biphenyls (PCBs)							
PCB-1016	< RDL	ug/l		0.5	02/24/2011 02:03	RKH	EPA 608
PCB-1221	< RDL	ug/l		0.5	02/24/2011 02:03	RKH	EPA 608
PCB-1232	< RDL	ug/l		0.5	02/24/2011 02:03	RKH	EPA 608
PCB-1242	< RDL	ug/l		0.5	02/24/2011 02:03	RKH	EPA 608
PCB-1248	< RDL	ug/l		0.5	02/24/2011 02:03	RKH	EPA 608
PCB-1254	< RDL	ug/l		0.5	02/24/2011 02:03	RKH	EPA 608
PCB-1260	< RDL	ug/l		0.5	02/24/2011 02:03	RKH	EPA 608
2,4,5,8-Tetrachloro-m-xylene, (Surro	ogate 95	%		Ö	02/24/2011 02:03	RKH	EPA 608
Decachlorobiphenyl, (Surrorate)	90	%		0	02/24/2011 02:03	RKH	EPA 608
Liquid-liquid Extraction Pest/PCB 60	08 Completed				02/22/2011 12:00	DBB	EPA 608



ROGERS & CALLCOTT

CHAIN OF CUSTODY RECORD PAGE _____ OF ____

			P.O. Box Phone (8 Shipping		C 29606 ix (864) 232-6 forest Way le, SC 29607						To the second	N/.	N /	/	/	Filtered (Yes/No) Cooled (Yes/No) Container Type (P/G)
	Client Nam	ie	ScHlu	m BENC	el			1			KL/	244			/-/	Container Volume
	Address										1/0	./	7	7	7	Sample Type (Grab/Composite)
				• •						ANIA	MIN	1/	/-	#	#	Sample Source (WW, GW, DW, Other)
	Report To:									N/	N/	17				Sample Source Chlorinated (Yes/No)
	Telephone					•	Seg		\n/\	×/je	9/	7	7	7	7	Lab Receipt Cl, Check Mcs/ Lab Receipt pH Check /2-22-1)
	PO No			! ^^	110	Truc	Containers		NX	7	I	\mathcal{I}	/	/	7	Lab Receipt pH Check /2-22-11
	FU NO		1	Pro	ect No		3		A	A						Preserved (Code)
	Rogers & Callcott	Yr.↓↓ Date	Time	San	nple Desc	ription	Number o	8								A-None D-NoOH G-Beric Acid B-HNO, E-HCL H-Ascorbic Acid C-H ₂ SO ₄ F-No ₄ S ₂ O ₃ I-
	Lab No.						Total Nur	PARAMETERS	755	AcB	l					COMMENTS:
AC	94099	2/22	0850	WATE	TREATH	hent plant	2		1] -	2					SAMPLEN SETO-TO 0850
		7				ischarge										on 2/21/4 Time pup.
																Br Rtc
																AC96398
-																OH 6.0 GRABTAKEN+
																THE 15.36 READO 0855
																ON 2/22/11 B2 Rtc.
	SAMPLER Relinquisi	ad by		2.22.11		Received by (Sig 2) Shipper Name &	W	<u>\</u>	a			/Time			KNO	WIN HAZARDS ASSOCIATED WITH SAMPLES
	Relinquisi	~	· /	Date		Received by (Sig (4) Shipper Name &						/Time				
	Relinquisi	hed by	(Sig.)	Date/	Time	Received by (Sig 5 Shipper Name &				1	Date,	/Time				reperature of blank or representative sample at time of collection 3.2°
	Seal #	0	t'chd byC) Recyd. Int	oct by			chd b	<u> </u>	Recv	rd. In	tact	by C		Α	t time of lab receipt 4.7 °C

ARCADIS

Attachment B

Laboratory Services Report: Whole Effluent Toxicity Testing

ROGERS & CALLCOTT LABORATORY SERVICES

AN EMPLOYEE-OWNED COMPANY

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Client:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Reported:

02/15/2011

South Carolina Laboratory Identification 23105 North Carolina Laboratory Certificate Number 27 NELAP Laboratory Identification E87822

Sample Number

AC94915

AC95182

Sample Description

 AC94831 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/01/2011 at 08:55

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/03/2011 at 09:10

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/04/2011 at 09:12

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

Rebuild Musice

Results reviewed by:

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary



Case Narrative

AC94831 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 02/01/2011 at 08:55

Composite sample AC94831 was subcontracted to ETT for Acute and Chronic Toxicity tests.

AC94915 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 02/03/2011 at 09:10

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

AC95182 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 02/04/2011 at 09:12

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

Sample Number	Sample Description, D	ate and Time (Collected				
AC94831	Schlumberger Technolo 02/01/2011 at 08:55	ogy TMC Water	Treatment Pl	ant Effluent	Discharge compo	osite, collect	ed on
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
Subcontracted Sample Analysis	Completed				02/15/2011 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 9 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

Sample Number	Sample Description, D	ate and Time (Collected				
AC94915	Schlumberger Technolo 02/03/2011 at 09:10	ogy TMC Water	r Treatment Pla	ant Effluent	Discharge compo	osite, collect	ed on
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
Subcontracted Sample Analysis	Completed				02/15/2011 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 9 pages for Acute and Chronic Toxicity from ETT Environmental inc.

Sample Number S	Sample Description, De	<u>ate and Time C</u>	<u>collected</u>					
	Schlumberger Technolo 02/04/2011 at 09:12	gy TMC Water	Treatment Pla	ant Effluent	Discharge compo	site, collect	ed on	
Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method	
Subcontracted Sample Analysis	Completed				02/15/2011 00:00			

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 9 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

P.O. Rox 16414, Greenville, SC 29806

4 Craftsman Court, Greer, SC 29650

Ceriodaphnia dubia Survival and Reproduction Test

EPA-821-R-02-013 Method 1002

Test Species:

Ceriodaphnia dubia

Client: SCHLUMBERGER

Facility: EFFLUENT

NPDES #: SC

Test Date:

01-Feb-11

Laboratory ID#: T37184

INVALID TEST

Test Reviewed and Approved By:

Add The State of t

Robert W. Kelley, Ph.D.

Laboratory Manager



Certification #E87819

SCDHEC Certification #23104

Test results presented in this report conform to all requirements of NELAC, conducted under NELAC Certification Number E87819

Florida Dept. of Health. Included results pertain only to provided samples.

NCDENR Certification # 022



South Carolina Department of Health and Environmental Control

DMR Attachment for Chronic Multi-Concentration Whole Effluent Toxicity Test Results Using Linear Interpolation

TWELVE MILE CREEK RESTORATION F Pennit number SC

Discharge number

FINAL LIMITS 04/01/2010-

Parameter Code TCP3B

MLOC=1 CTC= 17.40% effluent

Day

		Monitoring period	From 11	2 1	To 11	2 28
					Danmin	ction Data
			Mortal	ity Data	Reprodu	
		Group	# Adults	# Doad	Group	Group
					Average	Variance
Date	01-Feb-11	0	10	10	0.0	0.00
ab ID	23104	8	10	0	0.0	0.00
		17.4	10	0	0.0	0.00
		35	10	1	0,0	0.00
!.5 =	N/A	50	10	00	0,0	0.00
hr Chronic LC50 =	N/A	100	10	10	0,0	0,00
			-			
				 	 	
					<u> </u>	
urvival Effect at CTC=	- N/A			<u> </u>	<u> </u>	<u> </u>
production Effect at		Invali	d test o	due to c	ontrol n	nortality
						
			Mortal	ity Data	Reprodu	ction Data
			Mortal	ity Data	Reprodu	ction Data
		Group	Mortal	ity Data# Dead	Reprodu	Circup
		Group				
		Group			Group	Group
D	23104	Group			Group	Group
	23104	Group			Group	Group
D	23104	Group			Group	Group
iD =	23104	Group			Group	Group
-	23104	Group			Group	Group
ID 3=	23104	Group			Group	Group
ID 3=	23104	Group			Group	Group
iD =	23104	Group			Group	Group
ID 5= ur Chronic LC50 =		Group			Group	Group
ID 5= ar Chronic LC50 = Survival Effect at CTC		Group			Group	Group
ute ib ID 25= thr Chronic LC50 = Survival Effect at CTC: Reproduction Effect at		Group			Group	Group
ID 5= nr Chronic LC50 = Survival Effect at CTCsteproduction Effect at	CTC-				Group	Group
o ID 25= thr Chronic LC50 = Survival Effect at CTC: Reproduction Effect at mature of Principal Exc		rizod Agent			Group	Group

CHRONIC DEFINITIVE SURVIVAL AND REPRODUCTION/GROWTH TEST **Statistical Analyses**

Client:

TWELVE MILE CREEK RESTORATION PROJECT

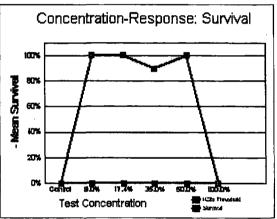
Sample Identification: EFFLUENT

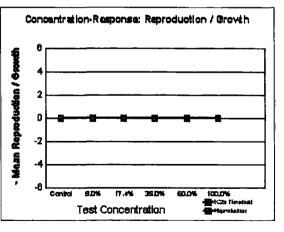
Test Date:

01-Feb-2011

Cests for Normality and Heterogeneity of Variance				Sample Use					
Parameter	Test Used	Result		Sample Da	Sample Date Sample Used				
Normality	N/A	N/A	Sample A	01-Feb-11	01-Peb-11	02-Feb-11			
Variance	N/A	N/A	Sample B	03-Feb-1 1	03-Feb-11	04-Feb-11			
			Sample C	05-Feb-11	05-Feb-11	06-Feb-11	07-Feb-11		

Tests for Differences in Survival and Reproduction										
Test Type Used:		Linear Interpolation								
		% Effluent								
Effect	Control	8.0%	17.4%	35.0%	50.0%	100.0%				
Survival	0.0%	100.0%	100.0%	90.0%	100.0%	0.0%				
_ % reduction		0.0%	0.0%	0.0%	0.0%	100.0%				
Reproduction	0.0	0.0	0.0	0.0	0.0	0.0				
% reduction (smoothed)		N/A	N/A	N/A	N/A	N/A				
Variance	0.00	0.00	0.00	0.00	0.00	0.00				
Acceptability C	riteria	Value	Upper	Limit	1	Lower Limit				
CV:Coeff, of Variation		N/A	42.0%		8.9%					
PMSD: % MSD		N/A	37.0%		11.0%					
MSD:Min. Sign	a. Diff.	0.0	N/A	, <u>.</u>						
IC25 Point Est	TEST RESULTS									
Survival IC25= N/A				%Reduction per Linear Interpolation						
Reproduction	IC25=	N/A		@CTC o	<u>r</u>	17.4	17.4%			
Hypothesis Testing				Survival effect N			A			
NOEC Reprodu	ection	N/A		Reproduct	ion effect	N/A				
ChV Reproduct	tion	N/A		1		N/	A			





Comments

Test terminated on Day 4 due to mortality.

Control mortality may have resulted from volatiles in effluent.

A 1-21						Test			-,			
11-20 B			1	2.	3	_ 4	5	6	7	8	Total	
88 1-20	14 1-21	Α										control
83 1-20 D D D D D D D D D D D D D D D D D D D	R1 1-20	В	لنسنيا									
331-20 E D D D D D D D D D D D D D D D D D D	A9 1-20	C										
117.4 F	A8 1-20	D				D						
117.4 F	Q3 1-20	Ē									0	
## 1-21 G	Q1 1-20	Ħ			D						0	
17.4 H	S4 1-21	G				D					0	
AA3 1-21	T9 1-21	Ĥ	_									
AA4 1-21 J D D O O O O O O O O O O O O O O O O O	AA3 1-21											
A	AA4 1-21	 										777
C	-V-1-21					<u>. </u>					_	0.0
C												
17.4		 					-					
Total Tota		<u></u>										
F		<u> </u>										
F	8	E										
H												
		G										
		H									0	
17.4											0	Mean
17.4		IJ										0.0
17.4 E											_	
17.4 E		В										
17.4 E		l c	\vdash							-		
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	D≐Dead	N/A	-Lost or	not use	d							

	707/07
Lab#	T37184
Client	SCHLUMBERGER
Sample ID	EFFLUENT
NPDES#	SC
County	0
Month	2
Start & fed Date	01-Feb-11
Start & fed Time	1600
Started & fed By	AE
Test Organism	Ceriodaphnia dubia
Neo. born date	31-Jan-11
Neo born time	BATCH 2
Test Type	SCCD
Dilution Water	MHSF
Unite for Conc.	%
%3rd BROOD	
Test vessels	30 ml
Test volume	15 ml
incubator#	1
Light	16lt/8dk
Initial Temp *C	25
Selenastrum	0.05 ml
YAT	0.05 ml
Test method	EPA 821-R-02-013:1002

TEST TERMINATED ON DAY 4 DUE TO MORTALITY IN CONTROL. NO FURTHER TEST DATA RECORDED ON DAY 4 BUT MORTALITY NOTICED THROUGHOUT. RESTARTED ON 2-5-11 WITH C SAMPLE.

AC

ROGERS & CALLCOTT

HAIN OF CUSTODY RECORD

PAGE _____

	1 18.	ABORATORY SERV	/ICES								······································
	P.O. Bo	x 5655, Greenville, SC 29606						/N/		/ /	/ / Filtered (Yes/No)
		(864) 232-1556 Fax (864) 232-6 ng Address: 426 Fairforest Way	140		1			٧/	/ /	7	Cooled (Yes/No)
	Ω	Greenville, SC 29607						7		7	/ / Container Type (P/G)
Client Name	Ko Soid	15 + CALLO TI					126	/ /	\mathcal{I}	7 /	/ / Container Volume
Address		~ · · · · · · · · · · · · · · · · · · ·					[ċ]		77	7	Sample Type (Grab/Composite)
·			·····			1	VW/	77	7	7	Sample Source (WW, GW, DW, Other)
Report To:						$-\sum_{k}$]/ ,	/ /	\mathcal{I}	7	Sample Source Chlorinated (Yes/No)
Telephone No.		FAX No		lers.			II	\mathcal{I}	77	7	Lab Receipt Cl. Check
PO No		~		Containers		[[77	7	7	Lab Receipt pH Check
FO NO		Project No				A					Preserved (Code)
Rogers & Yr.	Time	Sample Desc	ription	ber of	g	Acuter CHABINE					A-None D-NoOH G-Baric Acid B-HNO, E-HCL H-Ascorbic Acid C-H ₂ SO, F-No,S ₂ O, i-
Lab No. Da	te			Total Number	PARAMETERS						COMMENTS:
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Relinquished	by (5tgt)//	2/1/1/1340	Shipper Name &	W		2			גן מי		ELIVERED TO ETTLAB
18111	NV 4	Date/Time	Received by (Sig.	حدت		7		/Time	7	, e	
Relinquished	by (Sig.)		④ Shipper Name &	#							
D-Car Jahari	h (Cic.)	Date/Time	Received by (Sig.			_	Date	/Time		Ten	nperature of blank or representative sample
Relinquished 5	by (Sig.)		5 Shipper Name &	g.				1		A	At time of collectionC
Seal #	at'chd by(Recyd. Intact by	Seal #		chd by	/() F	ecvd. Ir	ntact by	ल	A	At time of lab receipt 2.4 °C
Form Revised											R/C COC FORM

ROGERS & CALLCOTT JABORATORY SERVICES

CHAIN OF CUSTODY RECORD PAGE ____ = /__

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			P.O. Box	5655, Greenville, SC 29606			}			<u>/N</u>				/ / F	iltered (Yes/N	la)
			Phone (8) Shipping	64) 232-1556 Fax (864) 232-6 Address: 428 Fairforest Way			1			/Y	/_/		\int	/ / Coc	oled (Yes/No)
		,	2.	Greenville, SC 29807	•				1	19/				/// Conti	alner Type (P,	/ <u>C</u>)
	Client Nan	ne <u>!\</u>	(a lotales 4	- CALLCOTT						26/	/.			/ Contail	ner Volume	
	Address						ļ						\mathcal{I}	Sample	Type (Grab/C	omposite)
								,	/W N/		$\bot \bot$	\bot	_	/ Sample S	ource (WW, G	W, DW, Other)
	Report To:	<u> </u>							N/		\angle			Sample Sa	ource Chlorina	ted (Yes/No)
	Telephone	No		FAX No		ners		\perp						Lab Receipt	Cl, Check	
	-					Containers	1	\bigsqcup						/ Lab Receipt pl	1 Check	
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	Rogers & Callcott	Yr	Time	Sample Desc	cription		85	3						B-HNO, E		eric Acid scorbic Acid
	Lab No.	00.0				Total Number	PARAMETERS	さられ						c	COMMENTS:	
						ှင	₹	CHA						ETT Log#	37184B	
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	SAMPLER Relinguisi	ned by	isigh)	Date/Time 2/3/11/400	Received by (Sig 2) Funct 16 Shipper Name &	y/ #	p.a.cabae		2/3/	ate/Ti	400	J _X		NN HAZARDS ASS DIVENDED TO		
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	Relinquis	hed by ((Sig.)	Jule 1	6	•			J.	<i>,</i> 				t time of collecti	-	°C
			المالية المالية	Recvd. Intact by	Shipper Name &		chd by	_	Racyal	. Intac	i by	ᅱ	Α	t time of lab rea	:eipt	c
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ROGERS & CALLCOTT HAIN OF CUSTODY RECORD

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			5655, Greenville, SC 29606						N			_/	/ / Filtered (Yes/No)
	Ⅲ.	Phone (8	84) 232-1556 Fax (864) 232-6 Address: 426 Fairforest Way	140					[V/	1	7	7	/ / Cooled (Yes/No)
	/	\bigcirc	Greenville, SC 29607			1		/	PT	7	7	7	/ / Container Type (P/G)
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Address											1	$\int_{-\infty}^{\infty}$	Sample Type (Grab/Composite)
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Report To:								$\mathcal{N}/$		//		\mathcal{I}	Sample Source Chlorinated (Yes/No)
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PO No			-	Tmc.	Containers				/_/				Lab Receipt pH Check
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Rogers & Callcott	Yr.Ll	Time	Sample Desc	ription	nber of	8	212	racksquare					A-None D-NaOH G-Boric Acid B-HNO, E-HCL H-Ascorbic Acid C-H ₂ SO, F-Na ₂ S ₂ O, i-
Lab No.	Date				otal Number	PARAMETERS	MONIC VICITY						COMMENTS:
					Total	PARA	\$6						37184C
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			2.7.5750										BIRTC
							0.000						
SAMPLER. Relinquish ①	ed My/	(Sig.)	Date/Time 2/4/17 1/4/25	Received by (Sig 2) The Wall Shipper Hame &		EI			ate/Tir				WIN HAZARDS ASSOCIATED WITH SAMPLES LIVERUED TO ETT LAB
Relinquish		(Sig.)	Date/Time	Received by (Sig.	_			7 7	ate/Tir				
3				Shipper Name &			_						
Relinquish	ed by ((Sig.)	Date/Time	Received by (Sig.	.)			Đ	ate/Tir	ne			perature of blank or representative sample
5				Shipper Name &	#								1 /1
Seal #		i'chd by	Recvd. Intact by	Seal #	ot'	chd b	Οv	Recvo	i. Intac	t by 🔾		A	t time of lab receipt / - 7 C R/C COC FORM
Form Revis	sed July	2008											K/C COC FORM



DMR Attachment for Pass/Fail Whole Effluent Toxicity Test Results

TWELVE MILE CREEK RESTORATION PROJE Permit number SC

Yoar Month Day

Discharge number

Year Month Day

and Environmental Control FINAL LIMITS

04/01/2010-

Parameter TGA3B

MLOC=1 ATC=35.50% effluent

ıte	01-Feb-11	Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fai
b ID	23104	Control	20	T 0				
•		Test	20	5	FAIL			
		-	Mortality Data	- Acute and Chron	ic Tests	Reproduction	Data-Chronic Tests	Only
ite .		Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fai
b ID		Control						
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ite .		Group	# Adults	# Dead	Pasa/Fail	Average	Variance	Pass/Fai
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ьпо			Mortality Data	- Acute and Chron	ic Tests Pass/Fail	Reproduction Average	Data-Chronic Tests Variance	Only Pass/Fa
te te		Test						
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te b ID cute		Group Control	# Adults		Pass/Fail	Average		Pass/Fa
b ID		Group Control	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fa
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			Co	ntrol Survi	val and Re	production	by Test D	ay				'	
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	С	, and the second	0							0]	Manual Commence	%
	C		0							0]	IVAC-	35.5
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	D		0							0		Progression Like	30 ml
	D		0							0		de advedima i	15 ml
	D		0							0	Mean	harms sea 2	1
	D		0							0	0.0	India Committee	16lt/8dk
		35.5	% Effluer	nt Survival	and Repro	duction by	Test Day					harmacian re-	25.1
		1	2	3	4	5	6	7	8	Total		Britistia (Suba 1975)	0.05 ml
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		or not used	<u> </u>							*****	_	1	
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				5655, Greenville, S							N/		///		Filtered (Y	es/No)
•	48511	Ш.		64) 232-1556 Fai Address: 426 Fai	forest Way	40	ı			\angle	У/_				Cooled (Yes	3/No)
		1.	γ_{-}	_	ile, SC 29607		1			1	//_/		<u> </u>	/ / Ca	ontainer Type	• (P/G)
	Client Non	ne 🔰	Co porter	C+CUI	LCOIL					176			<u> </u>	Con	tainer Volun	ne
	Address			· · · · · · · · · · · · · · · · · · ·			i	1	1					Samp	ple Type (Gr	ob/ <u>C</u> omposite)
									M	/W/				Sample	B Source (W	W, GW, DW, Other)
	Report To	:						ţ	Á	<i>i</i> /				Sample	Source Chie	orinated (Yes/No)
	•						Jers					II	//L	ob Recei	pt Cl. Chec	k
						Tmc	Containers	ļ ·					/ / Lal	Receipt	t pH Check	-
	FO No.			Pro	ect No		_		A					F	Preserved (C	ode)
	Rogers & Callcott	Yr	Time	San	nple Desci	iption	ber of	85	Many in					A-None B-HNO, C-H,SO,	D—NoOH E—HCL F—Na,\$,0,	G-Boric Acid H-Ascorbic Acid I
	Lab No.	Date					Total Number	PARAMETERS	Actient Chanie					<i>.</i>	COMMENTS	*
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		hed by	(3/3/)	Date,	/Time	Received by (Si 2) Shipper Name		/	2		e/Time	10 8	KNOWN H	NZARDS LEXES	ASSOCIATED	WITH SAMPLES
	Relinquit	7	7	Date	/Time	Received by (Si Shipper Name &	g.)				e/Time					
	Relinquis 5	hed by	(Sig.)	Date	/Time	Received by (Si 5) Shipper Name &				Date	e/Time		•		ection	esentative sample

at'chd by Recvd. Intact by

Seal # at'chd Form Revised July 2008

at'chd by

Recvd. Intact by

Seal #

_C R/C COC FORM

24

At time of lab receipt.



ROGERS & CALLCOTT

CHAIN OF CUSTODY RECORD

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	(BORATO		VICES						N7	7	7	7	/ / Filtered (Yes/No)
	A M	Ш.	Phone (864) 232-1556 F g Address: 426 Fa	ax (864) 232-6	5140	1				Ŋ	1	7	7	7	Cooled (Yes/No)
			1	Greenv	ille, SC 29607						<i> \psi </i>	1		7	/_	/ / Container Type (P/G)
Clie	ent Nom	ie <u>k</u>	O GENES.	- Onnco	II						KC/	-			-7	/ Container Volume
Ado	dress		***************************************			· · · · · · · · · · · · · · · · · · ·				E	7	7	7	7	7	Sample Type (Grab/Camposite)
										NN	7					Sample Source (WW, GW, DW, Other)
Rep	port To:									N/	-/	7		/_	7	Sample Source Chlorinated (Yes/No)
			-			an ·	ners		\mathcal{L}	\mathcal{I}	\mathcal{I}	\int	\int	I	I	Lob Receipt Cl. Check
						TMC	Containers		_	\angle						Lab Receipt pH Check
					Ject 140		4 -		A			,				Preserved (Code)
Coll	gers &	Yr. <u>//</u>	Time	Sa	npie Dasc	cription	ober of	25								A-None D-NoOH G-Baric Acid B-HNO, E-HCL H-Ascarbic Acid C-H _e SO, F-No _e S _e O, I-
Lab	No.	Date					Total Numbe	PARAMETERS	CHRONIC							COMMENTS:
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\bigcap																
						<u> </u>										
																
R	SAMPLER Relinquisi	ned by	(Sight)	2/3/)(/Time	Received by (Sig 2) Fruit 198 Shipper Name &	21/	3946422				/Time		×	_	HAN HAZARDS ASSOCIATED WITH SAMPLES DIVENDED TO ETT LAB
' T	Relinquis			Date		Received by (Sig (4) Shipper Name &					Date,	/Time				
R	Relinquisi 5)	hed by	(Sig.)	Date	/Time	Received by (Sig 6) Shipper Name &		:		(Dote/	/Time				perature of blank or representative sample t time of collection°C
	Seal #	a	t'chd by	Recvd. In	act by			chd t	oyO	Recv	rd. In	tact	by 🔾		A	t time of lab receiptC

Form Revised July 2008



ROGERS & CALLCOTT

CHAIN OF CUSTODY RECORD

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PAGE	 _ OF	

P.O. Box 5855, Greenville, SC 29806 Phone (864) 232-1556 Phone (864) 232		15		TA	BORATOI	XY SERV	VICES .						, ,				
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Form Revised July 2008

P.O. Box 5655, Greenville, SC 29606 Phone: (864) 232-1556 - FAX: (864) 232-6140

Laboratory Services Report

Cllent:

Schlumberger Technology Corporation Sangamo - Twelve Mile Creek Project

Attention Gary Odom by email

Date Received:

02/15/2011

Time Received:

12:15

Date Reported:

03/01/2011

South Carolina Laboratory Identification 23105

North Carolina Laboratory Certificate Number 27

NELAP Laboratory Identification E87822

Sample Number

Sample Description

AC95776

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/15/2011 at 08:45

AC95790

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/16/2011 at 08:54

AC96052

Schlumberger Technology TMC Water Treatment Plant Effluent Discharge

composite, collected on 02/18/2011 at 08:50

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have compiled with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by:

nuthorized signature

Carbon copy: Email to L Ketcham S Handley A Kohler S Cary

Results reviewed by:

This report may not be reproduced, except in full, without written permission from Rogers & Callcott, Inc.



Case Narrative

AC95776 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 02/15/2011 at 08:45

Composite sample AC95776 was subcontracted to ETT for Acute and Chronic Toxicity tests.

AC95790 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 02/16/2011 at 08:54

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

AC96052 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 02/18/2011 at 08:50

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

Sample Number Sample Description, Date and Time Collected

AC95776 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on

02/15/2011 at 08:45

Parameter Result Unit Flag RDL Date/Time Analyst Method

Completed 03/01/2011 00:00 Subcontracted Sample Analysis

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 9 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

Sample Description, Date and Time Collected Sample Number

AC95790 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on

02/16/2011 at 08:54

Parameter Result Unit Flag RDL Date/Time Analyst Method

Completed 03/01/2011 00:00 Subcontracted Sample Analysis

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 9 pages for Acute and Chronic Toxicity from ETT Environmental inc.

Sample Number Sample Description, Date and Time Collected

AC96052 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on

02/18/2011 at 08:50

Completed

Parameter Result

Subcontracted Sample Analysis

Unit

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 9 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

Flag

RDL

Date/Time

03/01/2011 00:00

Method

Analyst



DMR Attachment for Pass/Fail Whole Effluent Toxicity Test Results

TWELVE MILE CREEK RESTORATION PROJE Pormit number SC

Month

Discharge number

and Environmental Countral Final Limits

04/01/2010-

Parameter TGA3B

MLOC=1 ATC=35.5% offluent

			Mortality Date	a - Acute and Chron	nic Tests	Reproduction	Data-Chronic Tests	<u>Only</u>
Date _	15-Feb-11	Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fa
Lab ID	23104	Control	20	0				
		Test	20	0	Pass			
			Mortality Data	a - Acute and Chron	nic Tests	Reproduction	Data-Chronic Testa	<u>Only</u>
Date		Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fa
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		Test	l					
			Mortality Date	a - Acute and Chron	nic Tests	Reproduction	Data-Chronic Tests	Only
Date _		Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fa
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	•	Test	<u></u>					
			Mortality Date	a - Acute and Chro	nic Tests	Reproduction	Data-Chronic Tests	Only
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P.O. Box 16414, Greenville, SC 29606

Ceriodaphnia dubia Survival and Reproduction Test

EPA-821-R-02-013 Method 1002

Test Species:

Ceriodaphnia dubia

Client: SCHLUMBERGER

Facility: EFFLUENT

NPDES #: SC

Test Date:

15-Feb-11

Laboratory ID#: T37272

Test Reviewed and Approved By:

Dest 25

Robert W. Kelley, Ph.D. Laboratory Manager



Certification #E87819

SCDHEC Certification #23104

Test results presented in this report conform to all requirements of NELAC, conducted under NELAC Certification Number E87819 Florida Dept. of Health. Included results pertain only to provided samples.

NCDENR Certification # 022



and Environmental Control

DHEC 3710 (8/05)

DMR Attachment for Chronic Multi-Concentration Whole Effluent Toxicity Test Results Using Linear Interpolation

TWELVE MILE CREEK RESTORATION P Permit number SC

Discharge number

FINAL LIMITS 04/01/2010-

Group

Parameter Code TCP3B

Group

Month

Group

Reproduction Data

Day 28

MLOC=1 CTC= 17.40% effluent

	1	3/	34		١ '	
	ı	Year	Month	Day		Ye
Monitoring period	From	11	2	lι	То	11

Mortality Data

Dead

Adults

					Average	Variance
Date	15-Feb-11	0	10	0	26.5	19.17
.ab ID	23104	8	10	0	26.8	5.51
		17.4	10	0	26.3	4,46
		35	10	0	23,4	6.49
C25=	54.61%	50	10	0	21.5	13.39
18 hr Chronic LC50 =	> 100.0%	100	10	2	5.1	17.66
			<u> </u>			
			1		<u> </u>	
					<u> </u>	
% Survival Effect at CTC	= 0.0%	•				
6 Reproduction Effect at	CTC= 1.3%	•				
			Mortal	ity Data_	Reproduc	ction Data
		Group	# Adults	# Dead	Group	Group
					Average	Variance
Date					Average	Variance
	23104				Average	Variance
	23104				Average	Variance
	23104				Average	Variance
Lab ID	23104				Average	Variance
Lab ID	23104				Average	Variance
.ab ID C25=	23104				Average	Variance
.eb ID C25=	23104				Average	Variance
Lab ID	23104				Average	Variance
Lab ID	23104				Average	Variance
Lab ID IC25= 48 hr Chronic LC50 =					Average	Variance
Lab ID IC25= 48 hr Chronic LC50 = % Survival Effect at CTC	<u> </u>				Average	Variance
Date Lab ID IC25= 48 hr Chronic LC50 = % Survival Effect at CTC % Reproduction Effect at	<u> </u>				Average	Variance
Lab ID IC25= 48 hr Chronic LC50 = % Survival Effect at CTC)= a crc-	norized Apent			Average	Variance

CHRONIC DEFINITIVE SURVIVAL AND REPRODUCTION/GROWTH TEST Statistical Analyses

Client:

TWELVE MILE CREEK RESTORATION PROJECT

Sample Identification: EFFLUENT

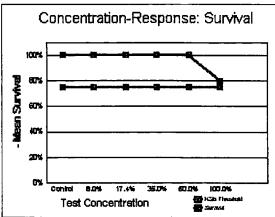
DESERVE A LABORATOR

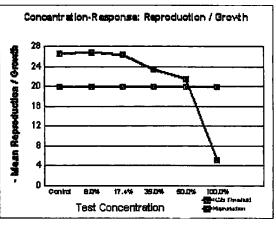
Test Date:

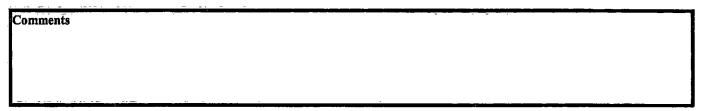
15-Feb-2011

Tests for Norm	nality and Heterogoneity of	Variance	Sam	ple Use			
Parameter	Test Used	Rasult		Sample Date	e Sam	pic Used	
Normality	N/A	N/A	Sample A	15-Peb-11	15-Feb-11	16-Feb-11	
Variance	N/A	N/A	Sample B	17-Feb-11	17-Feb-11	18-Feb-11	
			Sample C	19-Feb-11	19-Feb-11	20-Feb-11	21-Feb-11

Tests for Differences in Survival and Reproduction Test Type Used: Linear Interpolation % Effluent 35.0% 50.0% 100.0% Effect Control 8.0% 17.4% 100.0% 100.0% 100.0% 100.0% 100.0% 80.0% Survival 20.0% % reduction 0.0% 0.0% 0.0% 0.0% Reproduction 26.5 26.8 26.3 23.4 21.5 5.1 % reduction (smoothed) 0.0% 1.3% 12.2% 19.3% 80.9% 6.49 13.39 Variance 5.51 4.46 17.66 Acceptability Criteria Value Upper Limit Lower Limit CV:Coeff. of Variation 16.5% 42.0% 8.9% PMSD: % MSD 12.0% 37.0% 11.0% MSD:Min. Sign. Diff. 3.2 Acceptability criteria limits not exceeded TEST RESULTS IC25 Point Estimates Survival IC25= > 100.0% %Reduction per Linear Interpolation IC25= @CTC of Reproduction 54.6% Hypothesis Testing Survival effect 0.0% 50.0% Reproduction effect NOEC Reproduc 1.3% ChV Reproducti 70.7% PASS







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AA5 2-4	C			0	5	11	0	18		34	
B7 2-3	D			0	5	6	0	13		24	
V7 2-4	E			4	0	10	13	-76		27	
S9 2-4	F			o o	5	8	9	16		29	
C8 2-3	G			0	6	8	0	13		27	
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Lab#	T37272
Client	SCHLUMBERGER
Sample ID	EFFLUENT
NPDES#	sc
County	0
Month	2
Start & fed Date	15-Feb-11
Start & fed Time	1340
Started & fed By	uc
Test Organism	Cerlodaphnia dubia
Neo. born date	07-Dec-99
Neo. born time	BATCH 2
Test_Type	SCCD
Dilution Water	MHSF
Unite for Conc.	%
%3rd BROOD	
Test vessels	30 ml
Test volume	15 m
Incubator#	1
Llaht	16lt/8dk
Initial Temp °C	25
Selenastrum	0.05 ml
YAT	0.05 ml
Test method	EPA 821-R-02-013:1002

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ROGERS & CALLCOTT HAIN OF CUSTODY RECORD

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P.O. Bo	k 5655, Greenville, SC 29606						<u> </u>			/ / Filtered (Yes/No)
	864) 232-1556 Fax (864) 232-6 g Address: 426 Fairforest Way	140		1		LV	_			/ / Cooled (Yes/No)
D a	Greenville, SC 29607			1		PI				Container Type (P/G)
Client Name 106EX	S+CALLCO					X6/			\mathcal{L}	/ / Container Volume
Address					<u> </u>	à f	\int	\angle		Sample Type (Grab/Composite)
			ĺ		NA					/ Sample Source (WW, GW, DW, Other)
Report To:		 			/N/		\bot	\bot		Sample Source Chlorinated (Yes/No)
Telephone No.	FAX No		Containers			_/_		\bot		Lab Receipt Cl _e Check
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Relinquished by (Sig.)	Date/ Iline	④				1				
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Relinquished by (Sig.)	Date/Time	Received by (Sig	-,			Date/	ıme			·
(5)		Shipper Name &			<u></u>		···			At time of collection°C At time of lab receipt 25°C
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ROGERS & CALLCOTT YAIN OF CUSTODY RECORD PAGE _______

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		Phone (864) 232-1556 Fax (864) 232-6140 Shipping Address: 426 Fairforest Way									\mathcal{A}	/	<u>/,</u>	L.,		/ / Cooled (Yes/No)					
	Greenville, SC 29607						1				/ // /		/	_/	_/	/ / Container Type (P/G)					
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ARCADIS

Attachment 3



March Monthly Construction Photo Log



Demolition of Woodside I Dam nearing completion.



Remaining WSI dam concrete removed to bedrock.



Crane pad construction continues at WSII dam.



Disassembly of the penstock at WSII dam.



Dredge Clare (South Bank) and Dredge Kami (North Bank) continue to operate upstream of WSII.



Deconstructing access road and grading area next to location of former WSI dam.